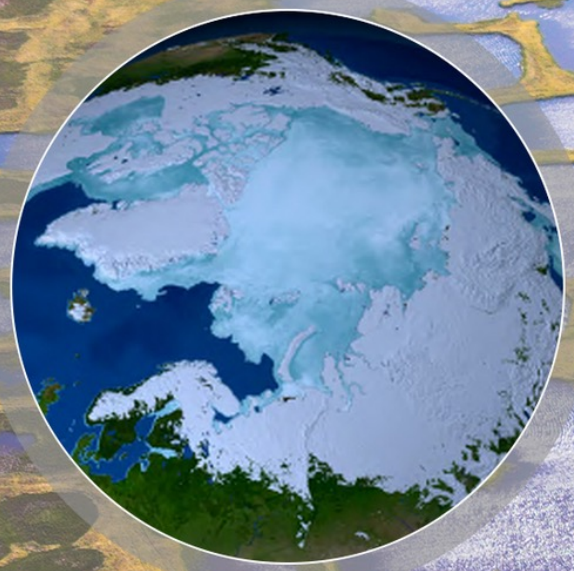
Arctic Methane and Permafrost Challenge (AMPAC)

An ESA and NASA collaborative community initiative

Summary

- In November 2019 NASA & ESA agreed to undertake the Arctic Methane and Permafrost Challenge (AMPAC)
- AMPAC was designed to foster inter-agency and international collaboration
- The AMPAC team rolled out the initiative to the International community at the 2020 European Polar Science Week
- Joint field campaigns are planned: MAGIC 2021 and ABoVE 2022
- ESA has announced 4 AMPAC-related funding opportunities



AMPAC WG Synthesis Activities

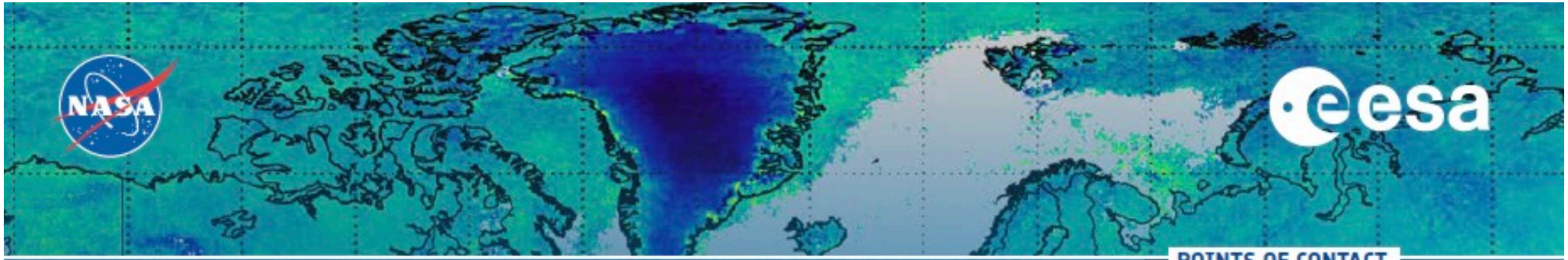
- The three working groups continue making progress towards synthesis studies and corresponding activities
- The Methane Arctic Permafrost Challenge Scaling the approach, E Malina et al., Nature Geosciences (in prep)
- Dynamic Permafrost Carbon in the New Arctic, KR Miner, M Turetsky et al., Nature Reviews in Earth and Environment (invited)
- Emergent biogeochemical risks and impacts of Arctic permafrost degradation, KR Miner et al, Nature Climate Change (in revision)

Additional Information on the Arctic Methane and Permafrost Challenge (AMPAC) NASA-ESA collaborative community initiative may be found at

https://cce.nasa.gov/methane_challenge.html

https://eo4society.esa.int/communities/scientists/arctic-methane-and-permafrost/

AGU Town Hall: Dec 2019



POINTS OF CONTACT

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NASA and ESA are planning a joint community initiative to investigate the linkages between permafrost degradation and Arctic methane emissions. Through this initiative ESA and NASA aim to foster scientific collaboration across the Atlantic to promote a community response to one of the main scientific challenges of the next decade:

To estimate and understand the magnitude and dynamic evolution of Arctic methane emissions

The AMPAC Initiative is Articulated Across 3 Working Groups

WG1: Enhanced Retrievals, Observations, & Data Sets. Enhances satellite retrievals over land and atmosphere, enhanced collection of data and in situ observations, validation, intercomparisons, building a consistent pan-Arctic data set

WG2: Reconciling observation strategies & modelling approaches. Advance the effective integration and reconciliation of data and modellin approaches, reconcile top-down and bottom up approaches, promote synthesis analyses, integrate process studies from local to pan-Arctic scales

WG3: Future observations & next generation missions. Prepare for future missions, future observations, future field and airborne campaigns, exploit advanced technologies

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AMPAC/MAGIC 2021
Arctic Methane Campaign in Scandinavia

C Crevoisier (CNRS-LMD), C Bes (CNES)

Twin Otter International Aircraft (To be used for Scandinavia August 2021)

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Opportunities for AMPAC Scientific Collaboration: 2021

ESA is planning to open the following opportunities in support of AMPAC:
Please, visit ESA STAR System for more information
https://doing-business.sso.esa.int/

1. **Call for AMPAC networking and collaborative research action (Intended 1-10461 - ESA POLAR SCIENCE CLUSTER - COLLABORATIVE RESEARCH AND NETWORKING ACTIONS)**

2. **Call to enhance satellites base methane retrievals in the Arctic (Intended ITT 1-10877 - ATMOSPHERE SCIENCE CLUSTER - RESEARCH OPPORTUNITIES 2)**

3. **Call for proposals – AMPAC Visiting Scientists Opportunities;**

4. **ESA-NASA collaborative campaign;**

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